

## Title

### **Detachable Front Guider Arrangement of Stroller**

#### Cross-Reference of Related Application

5           This is a Continuation-In-Part application of a non-provisional application having an application number 09/844,651 and a filing date of April 27, 2001.

#### Background of the Present Invention

#### **Field of Invention**

10           The present invention relates to strollers, and more particularly to a detachable front guider arrangement for a stroller wherein the front guider is constructed to be attached to and detached from the stroller, so as to change the front guider for different uses, such as a hand bar or a food tray, to fit the needs of the user

#### **Description of Related Arts**

15           Strollers, which have become becomes a necessity to every family having a young child or baby, are considered as a convenient tool to carry the baby or young child during outdoor activities such as foot traveling and shopping.

20           A conventional stroller comprises a front guider mounted on a front portion of a seat frame to protect the baby or young child. It also functions as a hand bar for the baby or young child to handle. Especially, during foot traveling, a vibration force may be transferred to the stroller through the wheels such that the hand bar is important to protect the young child and keep the young child in balance.

25           However, due to the position of the front guider with respect to the seat frame, the front guider may block the young child from getting in and out of the stroller. So, the parent must hug overhanging the young child into the stroller. Even though the front guider can be detached from the stroller, the original structure of the stroller must be altered to incorporate the front guider, thus complicating the attaching/detaching operation. Thus, the attachment between the stroller and the front guider must be rigid

enough to protect the young child. Since the young child is soft and weak, any mistakes of the front guider may cause unwanted injury to the young child.

5 However, the hand bar has no use when the young child is eating, in which the parent must carry the food on one hand while another hand must take care of the young child. So, a food tray is a good idea to incorporate with the stroller for placing the food on the tray.

### Summary of the Present Invention

10 A main object of the present invention is to provide a detachable front guider arrangement incorporated with a stroller, wherein the front guider can be quickly and easily attached to or detached from the stroller.

Another object of the present invention is to provide a detachable front guider arrangement for a stroller, wherein the detachable front guider arrangement provides a double safety engagement, i.e. the frictional engagement and the slot-in engagement, to ensure the attachment between the detachable front guider arrangement and the stroller.

15 Another object of the present invention is to provide a detachable front guider arrangement for a stroller, wherein the detachable front guider arrangement is interlocked with the stroller by its physical structure in comparison with the conventional mechanical structure, so as to simplify the original structure of the detachable front guider arrangement of the present invention.

20 Another object of the present invention is to provide a detachable front guider arrangement for a stroller, wherein the front guider is adapted to selectively mount at a front side of the stroller as a front boundary frame for the child or young child sitting on the stroller or mount at a rear side of the stroller as a tray for the parents.

25 Another object of the present invention is to provide a detachable front guider arrangement for a stroller, wherein the attachment of the front guider is improved in view of safety and operability. The front guider is interlocked with the stroller in one operable

action by combining two different directional movements, which is advantageous in practical use.

Another object of the present invention is to provide a detachable front guider for a stroller, which does not require that the original structural design of the stroller be altered, so as to minimize the manufacturing cost thereof.

Another object of the present invention is to provide a detachable front guider arrangement for a stroller, wherein the front guider of different kinds such as a hand bar or a food tray is interchangeable so as to fulfill the needs of the user.

Accordingly, in order to accomplish the above objects, the present invention provides a stroller which comprises a front frame having two front leg frames and a back frame constructed to support a seat frame thereon and a handle frame having two handle arms upwardly extended from the front frame.

The stroller further comprises a detachable front guider arrangement which comprises a front guider and a pair of coupling means for detachably coupling two ends of the front guider with the two front leg frames of the front frame respectively, each of the coupling means comprising a locking latch outwardly protruded from the respective front leg frame and a joint member mounted on the end of the front guider and detachably coupled with the front leg frame wherein a locking groove is formed on the joint member and arranged to engage with the locking latch so as to lock up the joint member on the front leg frame.

These and other objectives, features, and advantages of the present invention will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

## Brief Description of the Drawings

Fig. 1 is a perspective view of a stroller incorporated with a detachable front guider arrangement according to a first preferred embodiment of the present invention.

5 Fig. 2 is an exploded perspective view of the detachable front guider arrangement of the above first preferred embodiment of the present invention.

Fig. 3 is perspective view of a coupling means of the detachable front guider arrangement mounted on the stroller according to the above first preferred embodiment of the present invention.

10 Fig. 4 is a perspective view of a detachable front guider arrangement of a second preferred embodiment of the present invention.

Fig. 5 is an exploded perspective view of the detachable front guider arrangement according to the above second preferred embodiment of the present invention.

Fig. 6 is a partially perspective view of the detachable front guider arrangement according to the above second preferred embodiment of the present invention.

15 Fig. 7 is a partially rear perspective view of the stroller incorporating with the detachable front guider arrangement according to the above second preferred embodiment of the present invention, illustrating the detachable front guider arrangement detachably mounting at the handle frame of the stroller.

## Detailed Description of the Preferred Embodiment

Referring to Fig. 1 of the drawings, a stroller 1 which is incorporated with a detachable front guider arrangement 2 according to a preferred embodiment of the present invention is illustrated. The stroller 1, such as a standard stroller, comprises a front frame 11 having a pair of front leg frames 111 and a back frame 12 constructed to support a seat frame 13 thereon. The stroller 1 further comprises a handle frame 14 having a pair of handle arms 141 upwardly extended from the front frame 11.

As shown in Fig. 2, the detachable front guider arrangement 2 comprises a front guider 20 and a pair of coupling means 30 for detachably coupling two ends of the front guider 20 with the two front leg frames 111 of the front frame 11 respectively. Each of the coupling means 30 comprises at least a locking latch 31 outwardly protruded from on outer side of the respective front leg frame 111 and a joint member 32 which is mounted on the end of the front guider 20 and detachably coupled with the front leg frame 111, wherein at least a locking groove 33 is formed on the joint member 32 and arranged to engage with the locking latch 31 so as to lock up the joint member 32 on the front leg frame 111.

According to the preferred embodiment, the locking latches 31 are opposedly and outwardly protruded from the outer sides of the two front leg frames 111 of the front frame 11 respectively. Each of the locking latches 31 is a rivet perpendicularly mounted on the outer side of the respective front leg frame 111 wherein a predetermined length of a neck portion of the rivet is protruded from the front leg frame 111.

Each of the joint members 32 comprises a head joint 321 to connect the end of the front guider and a base joint 322 having a U-shaped cross section comprising two parallel supporting walls 3221, 3222 to fittedly mount the respective front leg frame 111 therebetween, wherein the locking groove 33 is formed on the respective outer supporting wall 3221, 3222 in such a manner that when the base joint 322 is mounted on the front leg frame 111, the locking latch 31 is engaged into the locking groove 33 in a vertical movable manner, so as to lock up the joint member 32 on the front leg frame 111.

Accordingly, the locking groove 33 is an elongated groove formed on a mid-portion of the supporting wall 3222 at an edge thereof wherein an opening of the locking groove 33 is provided at a bottom end thereof to provide a quick and easy attachment that requires a slide-down action to engage the locking groove 33 with the locking latch 31 when the base joint 322 is slidably mounted on the front leg frame 111.

In addition, an inner biasing surface 3223 is formed on an inner side of the base joint 322 to bias against the respective front leg frame 111 so as to frictionally engage the joint member 32 with the respective front leg frame 111 of the front frame 11. It is worth to mention that when the inner biasing surface 3223 of the base joint 322 is biased against the respective front leg frame 111, the opening of the locking groove 33 is guided to align with the respective locking latch 31 in such a manner that the locking latches 31 are slidably engaged with the locking grooves 11 respectively when the inner biasing surfaces 3223 of the base joints 322 are downwardly slid on the front leg frames 111 respectively so as to enhance the slot-in engaging operation between the locking latch 31 and the locking groove 33.

As shown in Fig. 3, the two supporting walls 3221, 3222 of the base joint 322 has a width slightly larger than a width of the front leg frame 111 such that when the joint member 32 is mounted on the front leg frame 111, two inner surfaces of the supporting walls 3221, 3222 are biased against the front leg frame 111 in a sandwiched manner while the inner biasing surface 3223 of each of the joint members 32 is substantially biased against the respective front leg frame 111 to guide the opening of the locking groove 33 above the respective locking latch 31. So, when the locking latch 31 is engaged with the locking groove 33, the front guider 20 is securely mounted on the front frame 11 so as to prevent an unwanted movement of the front guider 20 with respect to the front frame 11.

As shown in Fig. 2, the front guider 20 is a hand bar having two ends rotatably connected to two coupling means 30 by a pair of pivot joints 21 respectively. Each of the pivot joints 21 comprises a guider holder 212 which is firmly attached to the end of the front guider 20 and pivotally attached to the head joint 321 of the joint member 32 by a shaft 213, and a locker button 214 which is provided on an outer side of the guider holder 212 and arranged for selectively locking and unlocking a rotation movement of the front guider 20 with respect to the coupling means 30. In other words, for rotating the front guider 20, inward forces must be intentionally applied on the two locker buttons 214 in

order to freely rotate the front guider 20. So, the parent is able to rotatably adjust the front guider 20 at an adequate position for the young child to handle.

In order to attach the detachable front guider arrangement 2 to the stroller 1, a pushing force must be intentionally applied on the coupling means 30 to the front frame 11 so as to mount the front leg frames 111 between the two supporting walls 3221, 3222 of the base joints 322 of the joint members 32 respectively until the inner biasing surfaces 3223 of the base joints 322 are frictionally engaged with the front leg frames 111 of the front frame 11 respectively.

Then, a slide-down force is applied on the coupling means 30 to engage the locking grooves 33 with the locking latches 31 respectively while the inner biasing surfaces 3223 of the base joints 322 are sliding along the front leg frames 111 for locking the coupling means 30 on the front leg frames 111 respectively, so as to securely attach the front guider 20 to the front frame 11 of the stroller 1. In other words, the detachable front guider arrangement 2 provides a double safety engagement, i.e. the frictional engagement and the slot-in engagement, to ensure the attachment between the detachable front guider arrangement 2 and the stroller 1 by operating two different directional movements in one continued operation action.

It is worth to mention that the detachable front guider arrangement 2 of the present invention does not require any mechanical structure in order to lock up the joint members 32 with the front leg frames 111 respectively. However, the present invention designs to lock up the joint members 32 with the front leg frames 111 respectively by their physical structures to simplify the operation of the detachable front guider arrangement 2.

After attaching the detachable front guider arrangement 2 with the stroller 1 by means of the double safety engagement, the downward force applied on the front guider 20 by the user, such as a young child or even the parent, will further ensure the engagement of the detachable front guider arrangement 2 with respect to the front frame 11. Even though an upward force is applied on the front guider 20, the frictional engagement between the inner biasing surface 3223 of the base joint 322 and the front leg frame 111 will block the pivotal movement of the front guider 20 with respect to the front frame 11 so as to prevent the detachable front guider arrangement 2 from accidentally detaching from the stroller 1.

It is worth to mention that in order to detach the detachable front guider arrangement 2 from the stroller 1, the coupling means 30 must be pulled upwardly by respectively sliding the inner biasing surfaces 3223 of the base joints 322 along the front leg frames 111 at a position that the locking latches 31 are moved out of the locking grooves 33 respectively so as to prevent the front guider 20 being detached from the front frame 11 of the stroller accidentally, especially by the young child. Therefore, the detachable front guider arrangement 2 is adapted to be pulled to detach the coupling means 30 from the front frame 11 by frictionally disengaging the inner biasing surfaces 3223 of the base joints 322 with the front leg frames 111 of the front frame 11 respectively.

Referring to Fig. 4, a second embodiment illustrates an alternative mode of the detachable front guider arrangement 2' of the first embodiment, wherein the front guider 20', which is a food tray instead of the hand bar of the first embodiment, is detachably attached to the coupling means 30' in such a manner that the food tray of the front guider 20' can be detached from the stroller 1' for cleaning purposes.

As shown in Fig. 5, the head joint 321' of the joint member 32' comprises a U-shaped extending slot 3211' wherein the end of the front guider 20' having a U-shaped cross section is fittedly inserted into the extending slot 3211' so as to attach the front guider 20' to the coupling means 30'.

The detachable front guider arrangement 2' further comprises a pair of locking means 40' for locking up the two ends of the front guider 20' to the coupling means 30' respectively, wherein each of the locking means 40' has a through locking slot 41' formed on a sidewall of the end portion of the joint member 32' and a locking flange 42' formed on a corresponding sidewall of an end portion of the front guider 20', wherein the locking flange 42' is engaged with the locking slot 41' when the end of the front guider 20' is inserted into the extending slot 3211' of the joint member 32', so as to securely lock up the front guider 20' to the coupling means 30'.

Accordingly, the locking flange 42' is formed by cutting through the sidewall of the front guider 20', wherein one end of the locking flange 42' is integrally extended from the sidewall of the front guider 20' while an opposed free end of the locking flange 42' is in a suspended manner, so as to provide a flexibility of the locking flange 42'. Thus, a locking tip 421' is integrally protruded from the free end of the locking flange



42' for blocking on the locking flange 42' out of the locking slot 41', so as to lock up the front guider 20' to the coupling means 30', as shown in Fig. 6.

As shown in Fig. 7, the detachable front guider arrangement 2' further comprises two additional locking latches 31A', which are embodied as two rivets  
5 respectively, opposedly and outwardly protruded from outer sides of the two handle arms 141' of the handle frame 14' respectively, wherein a predetermined length of a neck portion of each of the locking latches 31A' is protruded from the outer side of the respective handle arm to engage with the locking groove 33' of the respective joint member 32' so as to securely lock up the front guider 20' with the handle frame 14'.

10 In other words, the detachable front guider arrangement 2' is adapted to be selectively mount to the front frame 11' to form as a front boundary frame for the stroller to restrict the user, such as a baby or a young child, sitting on the seat frame 13' and to the handle frame 14' to form as a tray for the parents, especially when the parents carry a drink or food which can be placed on the tray instead of inside the stroller.

15 Accordingly, the additional locking latches 31A' can be formed on the stroller 1 according to the first embodiment so that the front guider 20 which is embodied as the hand bar can be selectively mounted to the handle frame 14 in a detachably connecting manner to form as an adjustable handle bar for the stroller 1.

20 One skilled in the art will understand that the embodiment of the present invention as shown in the drawings and described above is exemplary only and not intended to be limiting.

It will thus be seen that the objects of the present invention have been fully and effectively accomplished. It embodiments have been shown and described for the purposes of illustrating the functional and structural principles of the present invention  
25 and is subject to change without departure from such principles. Therefore, this invention includes all modifications encompassed within the spirit and scope of the following claims.